



Understanding the health care utilization behavior to achieve the sustainable development goals—a comparative study of Malda District, India

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Abstract

The Sustainable Development Goals were finalized in September 2015 by following and expanding Millennium Development Goals with newer targets under the principle of ‘leaving no one behind’. One of the 17 goals is devoted to health (Goal number 3). Understanding the health care utilization behavior is essential to attain the health goal by providing adequate and quality health services. The study seeks to understand the health care utilization behavior and its determinants in Malda district, India. For this study, the primary data are collected through a household survey with a pre-designed schedule. For that, for a comparative discussion, Englishbazar and Chanchal- II blocks have been chosen by purposive sampling considering the best and worst health conditions, respectively. The sample size was 100 families for each block. Analytical methods like chi-square, correlation, and regression analysis are used for the study. The four categories of treatment patterns that have been recognized in the study area; are self-treatment, government institution, qualified doctors and private institution, and the presence of quack doctors. People’s education and income were the confounding factors of such treatment patterns. Many of the respondents are getting treatment from quack doctors or rely on self-treatment based on their very little knowledge of medicine, resulting from a lack of awareness among local communities. It may be concluded that besides socio-economic factors, the availability of insufficient health care facilities influences the health care utilization behavior in the study area.

Keywords Sustainable development goals · Universal Health Coverage · Underutilization · Public–Private Partnerships · Determinants

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Introduction

The Sustainable Development Goals (SDGs) were finalized in September 2015 by following and expanding Millennium Development Goals (MDGs) with newer targets. The SDGs include 17 goals and 169 targets (Tangcharoensathien et al. 2015; WHO 2015) under the principle of ‘leaving no one behind’ (WHO 2017). One of the 17 goals (Goal no. 3) has been devoted to health. The SDG 3 can be translated into 13 targets, among them, three are related to reproductive and child health; three include communicable, non-communicable diseases and addiction; two for environmental health; and one to achieving Universal Health Coverage (UHC); rest four targets adopt tobacco control, vaccines and medicines, health financing and workforce and global health risk preparedness (Pettigrew et al. 2015). There has been significant progress towards achieving the goal of UHC in southeast Asian countries such as Thailand, Vietnam, Indonesia, and Cambodia (Tangcharoensathien et al. 2011; Li et al. 2011; Lagomarsino et al. 2012; Simmonds and Hort 2013; Annear et al. 2015). The national health policy of India aims to achieve equity in health and health care by improving access to quality care (Ager and Pepper 2005; Bagchi et al. 2020). It is important to understand local communities’ health care utilization behavior to provide effective and quality health services because adequate information about health care utilization leads to good management and planning of the health system (Tanser et al. 2001; Baker and Liu 2006). Underutilization of health care facilities may lead high mortality rate (Thaddeus and Marine 1994; Singh et al. 2012).

Influencing factors of health care utilization can be categorized into two broad categories; service factors and user factors. Service factors are associated with the health care system’s availability, accessibility, and quality. On the other hand, user factors include characteristics of patients such as age, sex, education, income, cultural practices, and others. A person’s self-perceived health status, the characteristics of the users, and also the availability and the quality of health care services influence the decision to utilize a health care facility (Fernandez- Olano et al. 2006).

The main objective of the present study is to understand the health care utilization behavior of local communities and its determinants in the Malda district. The study considered user characteristics such as age, gender, marital status, education, and income among various determinants. Many earlier studies also focused on such determinants (Sanjel et al. 2012; Falaha et al. 2016; Yunus et al. 2017; Wagstaff 2012; Akazili et al. 2012). Many research works have focused on understanding the utilization pattern of health care services in India (Chatterjee et al. 2018; Paul 2020; Singh et al. 2012; Bagchi et al. 2020). Studies documenting the utilization pattern of health care facilities in Malda and West Bengal are minimal. Therefore, the present study investigated the said pattern which may add value to providing efficient services. The proper understanding of health care utilization behavior at the grass-root level is essential to achieve the goals of SDGs. The study results have been divided into two parts; at the beginning, the overall and block-wise distribution of health care facilities have been discussed, second part

identified the prevalent behavior and its various influencing factors. For a better understanding of the utilization behavior of Malda district, a comparative discussion between two blocks having the best and worst health care facilities has been done.

Research questions

The study has attempted to answer the following research questions:

1. Are the local communities of the study area utilizing the available facilities properly?
2. What about the utilization behaviors of local communities prevalent in the area?
3. What are the important factors affecting the utilization behavior?

Methodology

Data collection

The study is mainly based on primary data, collected through a household survey in two sample blocks namely Englishbazar (EB) and Chanchal- II (C-II) with a pre-designed schedule including close-ended and open-ended questions.

Sampling

The study area, Malda district has been selected by purposive sampling for its poor condition in distributing health care facilities as per the requirement (Askari and Gupta 2015). After selecting the study district, two blocks namely Englishbazar (for its best health condition) and Chanchal- II (for its worst health condition), were chosen by purposive sampling.

Finally, two wards namely Mirchak and Sukantapalli in Englishbazar and Chandrapur village in Chanchal- II block have been selected by 'purposive random sampling' to consider both the Hindu and Muslim communities. In the Englishbazar block, the total number of families is 58815, out of which 100 families (0.17 percent of the total population) have been selected for a depth study. On the other hand, in Chanchal-II block the total number of families is 43218, out of which 100 families (0.23 percent of the total population) have been chosen for detailed analysis (see Table 1).

Predictor variables

The dependent variables used for the study are, the different sources of treatment, such as self-treatment, government institution, private institution and qualified

Table 1 Preliminary appraisal of the patient family (Source Primary survey 2016)

Indicators	Englishbazar	Chanchal- II
No. of family	100	100
Total family member	334	359
No. of disease affected family	92	96
Disease affected family member	240	272
% of disease affected family member	71.86	75.77
Disease affected Male	109	124
Disease affected Female	131	148

doctors, and quack doctors. Whereas, the independent variables are age, marital status, gender, education, and income.

Analytical framework

Descriptive and inferential statistics were employed to analyze the data. Descriptive statistics including percentages, and frequencies were used to describe the characteristics of the respondents. Inferential statistics like chi-square, correlation, and regression have been calculated. The Chi-square test is applied in statistics to test the goodness of fit to verify the distribution of observed data with assumed theoretical distribution. Therefore, it is a measure to study the divergence of actual and expected frequencies. For this calculation, a hypothesis is established along with the significance level (Pillai and Bagavathi 2013).

$$\text{Chi - square } (\chi^2) = \sum \left[\frac{(O - E)^2}{E} \right],$$

where O = Observed frequencies, E = Expected frequencies.

Degree of freedom (V) for 2*2 contingency table = (c - 1)(r - 1),

where r = rows and c = columns.

Thereafter, correlation and regression analysis have been calculated to examine the nature and magnitude of the relationship between the dependent and independent variables. The term correlation indicates the relationship between two variables in which a change in the value of one variable influences the other variable. Coefficient measures the intensity of correlation between two sets of variables is called a correlation coefficient (Pillai and Bagavathi 2013).

$$r = \frac{\sum xy - \frac{\sum x \cdot \sum y}{N}}{\sqrt{\left(x^2 - \left(\frac{\sum x}{N}\right)^2\right)\left(y^2 - \left(\frac{\sum y}{N}\right)^2\right)}}$$

$$t = r \sqrt{\frac{n - 2}{1 - r^2}},$$

where y = dependent variable, x = independent variable, t = test of significance, r = correlation coefficient, n = total number of observations.

Regression analysis shows the nature of the cause-and-effect relationship between a dependent (Y) variable and one or more independent variables (x). It explains that due to one unit change in the independent variable how many units of change will occur in the dependent variable (Pillai and Bagavathi 2013).

$$y = a + bx,$$

where y = dependent variable, a = intercept, b = slope.

Study area

The Malda district, in the state of West Bengal, lies between 24° 40' 20" N and 25° 32' 08" N latitude, and the longitude is 87° 45' 50" E to 88° 28' 10" E. The district covers an area of 3733 square kilometers (see Fig. 1). The district comprises two subdivisions: Chanchal and Malda Sadar. English Bazar is the district headquarters. There are 15 development blocks, and two municipalities (The Portal of North Bengal Development Department).

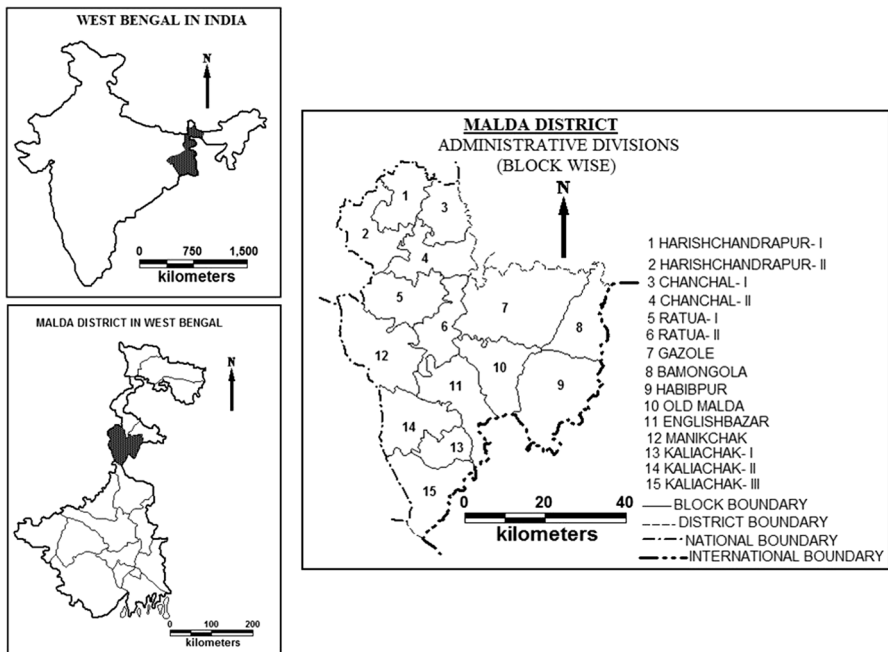
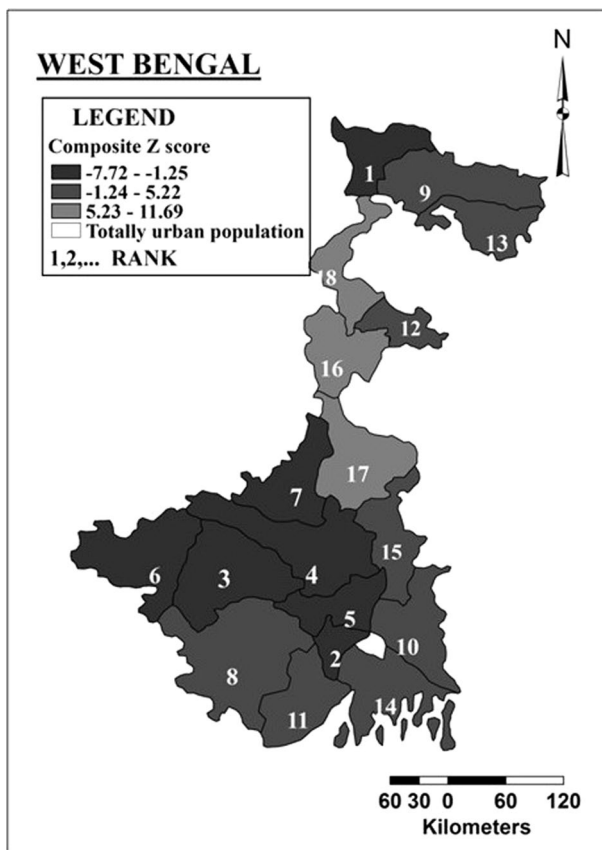


Fig. 1 Location map of Study area

Areal justification

The reason for selecting Malda district as the study area is its alarming health condition. To highlight the relative position, a map has been given to show the distribution of composite z-score values in different districts computed by summing up z-score values of various health care facilities such as Hospital, Community Health Centre (CHC), Public Health Centre (PHC), Sub Centre (SC), ambulance and bed. The z-score values of said facilities were calculated based on population load per facility. The given (Fig. 2) highlights that the position of Malda district is relatively meager with a high composite z-score value accounting for 5.44 and occupying 16 ranks among 18 districts (excluding Kolkata and newly formed districts).



Source: Computed with the data available from Directorate of Health Service, GoWB, 2012

Fig. 2 Spatial distribution of composite index of various health care facilities in different districts of West Bengal

Results and discussion

Health care services

Like the health care system in India, the Malda district also consists of three tiers of the health care system. The primary health care system is considered a grass-root level health facility, by which individuals, families, and communities are connected with the national health system, where most of the health problems can be dealt with and resolved. The Malda district's primary health care facility includes the Primary Health Care centre (PHCs) and Sub Centre (SCs). The second tier of the health care facility is a secondary level of a health care system which is considered an intermediate level of the health care system. It provides health services across the whole block. The study area comprises Rural Hospitals (RHs), Block Primary Health Centre (BPHCs). Although in the district both said facilities are considered Community Health Centre (CHCs). Lastly tertiary level of the health care system makes room for district-level facilities like District hospitals, Medical Colleges, which may be characterized as a more specialized level than the secondary health care level which provides specific facilities with the help of specialized health workers. The overall health care facility distribution (see Table 2) and block-wise distribution (see Table 3) have been given to understand the distribution of health care facilities in the study district.

Utilization behaviors of health care services

In the sample blocks, four types of medical systems were reported by the respondents as same as the co-existence of various forms of modern and traditional medical systems in many developing countries, which can be termed 'Medical Pluralism' (Phillips et al. 1992). (Fig. 3) highlights that most of the patients in both sample blocks took treatment from the Allopathic medical system. Homeopathic treatment was more prevalent among families with four to five disease incidents; because it is relatively cheaper, as per their opinion. In both blocks very small number of patients took Ayurvedic treatment. The traditional medical treatment system was absent in the Englishbazar block and a negligible number of patients took said treatment in Chanchal- II block.

Table 2 Health care facilities in Malda District

Facility type	Total no
Hospitals	5
Sub-divisional hospital	1
Rural hospitals (RHs)	12
Block primary health centre (BPHCs)	4
Primary health centre (PHCs)	34
Sub centre (SCs)	511

Source: CMOH office, 2014

Table 3 Distribution of various public health care facilities

Block name	No of facilities					
	hospitals	Sub-divisional hospital	Rural hospitals	BPHCs	PHCs	SCs
Harishchandrapur-I	0	0	1	0	3	25
Harishchandrapur-II	0	0	0	1	2	33
Chanchal-I	0	1	0	0	2	27
Chanchal-II	0	0	1	0	2	25
Ratua-I	0	0	1	1	2	36
Ratua-II	0	0	0	1	2	25
Gazole	0	0	2	0	3	60
Bamongola	0	0	1	0	2	27
Habibpur	0	0	1	0	2	43
Old Malda	0	0	1	0	2	25
English Bazar	5	0	0	1	2	33
Manikchak	0	0	1	0	3	35
Kaliachak-I	0	0	1	0	3	42
Kaliachak-II	0	0	1	0	2	34
Kaliachak-III	0	0	1	0	2	41

Source: CMOH office, Malda district, 2014

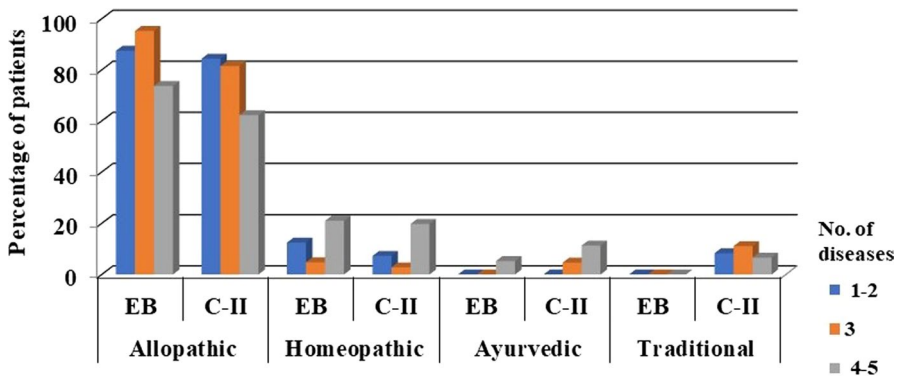


Fig. 3 Distribution of patients according to the system of medical treatment in the family (Source Field survey 2016)

The health care utilization pattern of the study area can be explained by the nature of treatment among patients. In the study area four categories, such as self-treatment, government institution, qualified doctors and private institution, and lastly quack doctors have been identified. The given (Fig. 4) reveals that a small number of patients were treated by themselves and this nature of treatment was found among families having a smaller number of disease cases. Many families with more than three disease incidents were more dependent on government institutions in both blocks, moreover in that case, many patients of Chanchal- II block relied on quack

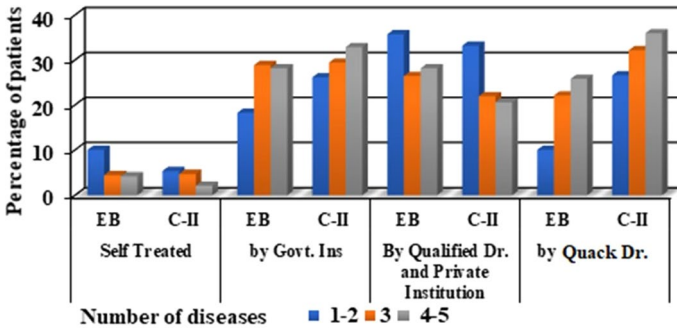


Fig. 4 Distribution of patients according to the nature of treatment in the family (Source Field survey 2016)

doctors. Most of the families with any number of diseases took treatment from qualified doctors and private institutions in Englishbazar, whereas in Chanchal- II block said facilities are utilized by the families with a smaller number of disease incidents.

Factors affecting the utilization behavior

Chi-square analysis is done to determine the impact of various socio-economic conditions on health care utilization patterns. The findings of the chi-square test revealed that there is significant relation present in the Englishbazar block for all indicators which are included in this study. However, in the case of Chanchal- II block a few indicators namely age, income, and education are statistically correlated with health care utilization patterns (see Table 4 for Chi-square analysis, also see Table 5 for correlation and regression analysis which has been discussed below).

Factors influencing self-treatment pattern

The study found self-treatment has been done by a few numbers of respondents from both sample blocks, which is an expression of carelessness about health; because treatment without proper knowledge may bring health hazards. The self-treatment pattern is more popular among people aged 14 to 50 years. Moreover, many respondents from both sample blocks also talked about self-treatment who belonging to the 50 to 60 age group, whereas said treatment pattern is less popular among children (0 to 14 years) and old members (more than 60 years), so it may be said from the findings that people are more careful about child and old people. Because self-treatment is vulnerable for patients and sometimes it may be life-threatening. The analysis supports that the self-treatment pattern is positively correlated with both male and female populations. Moreover, the relation is quite strong for the male population in both study areas. On the other hand, the self-treatment pattern is not well-liked among the female population in both sample blocks. As per the respondents, the

Table 4 Association between types of treatment and related factors (Source Field survey 2016)

Column variables	Row variables	Block name	χ^2	5%	1%	Sig/Insig	H_0/H_1	Degree of Freedom	N
Number of different types of treatment	Age	EB	38.90	21.03	26.22	Sig	H1	12	EB = 92
		C-II	29.44	21.03	26.22	Sig	H1	12	C- II = 96
	Religion	EB	10.49	9.49	13.28	Sig	H1	4	
		C-II	2.35	9.49	13.28	Insig	H1	4	
	Sex	EB	18.01	9.49	13.28	Sig	H1	4	
		C-II	6.38	9.49	13.28	Insig	H1	4	
	Marital status	EB	38.37	9.49	13.28	Sig	H1	4	
		C-II	6.94	9.49	13.28	Insig	H1	4	
	Income	EB	59.22	15.51	20.09	Sig	H1	8	
		C-II	40.73	15.51	20.09	Sig	H1	8	
	Education	EB	112.37	36.42	42.98	Sig	H1	24	
		C-II	129.36	36.42	42.98	Sig	H1	24	

Table 5 Absolute and causal relationship between the source of treatment and various factors (Source Field survey 2016)

Y variables	Self-treated			Government health institution			Qualified doctors and private institution			Quack doctors			
	Block	R	b	r ²	R	b	r ²	R	b	r ²	R	b	r ²
0-14	EB	0.12**	0.38	0.01	0.09**	0.45	0.01	0.88*	1.45	0.77	0.31*	0.21	0.1
	C-II	0.19**	0.23	0.04	0.37*	0.77	0.14	0.66*	0.67	0.44	0.38*	0.34	0.14
14-50	EB	0.67*	0.86	0.45	0.55*	1.26	0.3	0.55*	1.01	0.3	0.44*	1.23	0.19
	C-II	0.8*	1.32	0.64	0.71*	1.56	0.5	0.42*	0.59	0.18	0.72*	1.52	0.52
50-60	EB	0.55*	1.07	0.3	0.47*	0.98	0.22	0.51*	0.78	0.26	0.36*	0.85	0.13
	C-II	0.59*	0.45	0.35	0.55*	0.27	0.3	0.41*	0.59	0.17	0.62*	1.71	0.38
60+	EB	-0.34*	0.98	0.12	-0.44*	0.34	0.19	0.66*	0.67	0.44	0.23*	0.34	0.05
	C-II	0.18*	0.42	0.03	0.31*	0.22	0.1	0.16**	0.65	0.03	0.51*	1.25	0.26
Male	EB	0.45*	0.34	0.2	0.56*	0.44	0.31	0.64*	0.52	0.41	0.21*	0.49	0.04
	C-II	0.64*	0.44	0.41	0.89*	0.99	0.79	0.51*	0.78	0.26	0.51*	1.28	0.26
Female	EB	0.25*	0.65	0.06	0.21*	0.31	0.04	0.56*	0.99	0.31	0.27*	0.56	0.07
	C-II	0.27*	0.76	0.07	0.41*	0.56	0.17	0.39*	0.69	0.15	0.65*	1.65	0.42
Married	EB	0.47*	0.88	0.22	0.47*	0.77	0.22	0.65*	1.27	0.42	0.54*	1.34	0.29
	C-II	0.25*	0.47	0.06	0.27*	0.67	0.07	0.31*	0.45	0.1	0.89*	1.78	0.79
Unmarried	EB	0.18**	0.32	0.03	0.34*	0.33	0.12	0.59*	0.28	0.35	0.3*	0.38	0.09
	C-II	0.13**	0.31	0.02	0.88*	1.14	0.77	0.52*	0.78	0.27	0.52*	0.78	0.27
Illiterate	EB	-0.66*	0.89	0.44	0.33*	0.78	0.11	0.45*	0.24	0.2	0.91*	2.24	0.83
	C-II	-0.57*	1.08	0.32	0.48*	0.67	0.23	0.19**	0.19	0.03	0.88*	2.11	0.77
I-IV	EB	-0.44*	0.54	0.19	0.19**	0.78	0.03	0.15**	0.17	0.02	0.81*	1.97	0.66
	C-II	-0.11**	0.65	0.01	0.67*	0.56	0.45	0.49*	0.29	0.24	0.79*	1.28	0.62
V-VIII	EB	-0.15**	0.23	0.02	0.19**	0.21	0.03	0.18**	0.18	0.03	0.7*	1.15	0.49
	C-II	-0.19**	0.48	0.03	0.47*	0.29	0.22	0.12**	0.14	0.01	0.72*	1.1	0.52
IX-X	EB	0.15**	0.88	0.02	0.19**	0.31	0.03	0.19**	0.21	0.03	0.52*	1.31	0.27
	C-II	0.19**	0.77	0.03	0.24*	0.28	0.06	0.23*	0.24	0.05	0.58*	1.2	0.34

Table 5 (continued)

Y variables	Self-treated			Government health institution			Qualified doctors and private institution			Quack doctors			
	Block	R	b	r ²	R	b	r ²	R	b	r ²	R	b	r ²
XI-XII	EB	0.17**	0.77	0.03	0.12**	0.29	0.01	0.51*	0.42	0.26	0.29*	0.92	0.08
	C-II	0.42*	0.34	0.18	0.16**	0.45	0.03	0.52*	0.51	0.27	0.51*	0.99	0.26
Graduation	EB	0.46*	1.12	0.21	-0.34*	1.17	0.12	0.89*	1.17	0.79	-0.87*	2.16	0.76
	C-II	0.55*	1.01	0.3	-0.41*	1.21	0.17	0.76*	1.09	0.58	-0.33*	1.09	0.11
Higher education	EB	0.78*	0.77	0.61	-0.67*	1.32	0.45	0.76*	0.99	0.58	-0.7*	1.98	0.49
	C-II	0.54*	0.56	0.29	0.54*	0.56	0.29	0.88*	0.97	0.77	-0.78*	1.67	0.61
Family income	EB	-0.89*	1.34	0.79	-0.87*	1.45	0.76	0.98*	1.45	0.96	-0.9*	1.77	0.81
	C-II	-0.49*	1.46	0.24	-0.71*	1.34	0.5	0.89*	1.34	0.79	-0.69*	1.56	0.48

*Significant, **Insignificant, p < .05

male population is engaged in different workplaces and that's the reason they go for self-treatment at the initial stage of morbidity to avoid leave from their work.

The correlation and regression analysis found a positive relationship between this health care utilization pattern and marital status, although the relation is significant for married patients and insignificant for unmarried patients. Most unmarried people have sufficient time to get treatment from other service providers. In both study areas, there are negative relations present between self-treatment patterns and illiterate patients in addition to less qualified (up to eight class) patients. The negative relation is significant for illiterate patients with high regression coefficient (b) values. The self-treatment pattern is positively correlated with those patients having nine to higher educational qualifications and the relation is significant for graduation and higher qualification. Patients with moderate to higher educational qualifications have little knowledge about medicine that's the reason many of them do not visit doctors or health institutions for treatment at the initial stage of morbidity to avoid the consumption of time as well as money. The self-treatment pattern has significant negative relation with income which may be explained as if income increases then there is a chance of a decrease in self-treatment pattern among patients. During household surveys, it is realized that patients with higher family incomes can get treatment from qualified doctors and different health institutions. Notwithstanding, the picture is quite different for the working male population belonging to higher income groups as they rely on self-treatment in many cases due to their workload.

Factors influencing the utilization pattern of the government health institution

From the beginning time, India and West Bengal governments have been paying attention to providing health facilities to people. At different times the government established various types of health institutions, although the establishment of health infrastructure does not follow the population growth. The utilization of government institutions may be determined by different socio-economic factors.

The study found that many patients belonging to the 14 to 60 years age group are getting treatment from government health institutions. According to many respondents, the least cost for treatment provided by government institutions is one of the factors for utilization. On the other hand, child and old patients of Englishbazar block are relatively less dependable on government health institutions because of the time-consuming nature of the treatment, and they are getting the services from private hospitals and qualified doctors largely available in Malda town. The spatial distributions proved that insufficient health institutions exist in the Malda district, which may be a reason behind the time-consuming nature of the treatment. The utilization of government health institutions is relatively popular among male patients in both sample blocks as compared to female patients and this behavior is more prominent in Chanchal- II block. It is easy for the male population to go long distances to complete official formalities and stand in long queues to get services. On the contrary, it is difficult for the female population to maintain the queue and long waiting time by abstaining from domestic responsibilities. The utilization of government health institutions is positively correlated with married and unmarried patients

although regression coefficient (b), as well as the coefficient of determination (r^2) values, support married patients in Englishbazar block and unmarried patients in Chanchal- II blocks are more attracted by a government institution. In Chanchal- II block, numerous married people are working out of living places, which is why less utilization pattern of government facilities is found among them.

The result highlights that utilization of government institutions is mentionable for less qualified (up to class XII) patients whereas utilization of the same is negatively correlated with highly qualified patients with handsome family income. Many reasons, such as time consumption, lack of beds in health institutions, dirty environment, high doctor-patient ratio, and others responsible factors for less utilization pattern reported by most of the highly qualified patients in both sample blocks. The study found a significant negative relationship between income and utilization of government health institutions. Most of the respondents with better socio-economic conditions also incriminated said factors for their ignorance of government health institutions.

Factors influencing the utilization pattern of qualified doctors and private institution

The existence of private chambers established by qualified doctors in different places in the Malda district is a very common picture, and the picture is more prominent in the Englishbazar block than in other blocks. The analysis found a positive correlation between the utilization of qualified doctors as well as a private institution and different age group of patients and the relation is significant for most of the age groups except old patients more than 60 years of age in the Chanchal- II block. The statistical analysis found a strong relationship with the child population compared to other age groups. The utilization of qualified doctors and private institutions as per sex and marital status shows a significant positive relationship in both sample blocks. The coefficient of determination (r^2) shows male patients in both sample blocks and married patients in the Englishbazar block and unmarried patients in Chanchal- II block, were more attracted by qualified doctors.

Although in both blocks, positive relation between different educational levels and utilization of private health facilities was found from the household survey, regression coefficient (b) and coefficient of determination (r^2) depict the relation is relatively stronger for those patients who have graduated and higher educational qualification as compared to those patients with less qualification. The study found that maximum qualified patients belong to relatively better socio-economic groups and can afford the cost of treatment from private institutions. Mainly in Englishbazar block private chambers of qualified doctors are more available which is why patients do not need to pay more effort to get treatment. According to many educated respondents they avoid government institutions due to the time-consuming nature of treatment that's the reason they prefer to visit the chamber of qualified doctors. Although private chamber of doctors provides treatment facilities to patients, according to many respondents, such private chambers badly influence the quality of treatment in a government health institution because many doctors in government

hospitals are involved with the private chambers. One of the important factors influencing the utilization of qualified doctors and private institutions is family income. The correlation analysis found a significant positive relation between said variables. As mentioned above many of the respondents get treatment from qualified doctors to avoid time consumption, bed crisis, low doctor-patient ratio, and others in government health institutions. It is easy for those who have a better family income to pay money for treatment.

Factors influencing the utilization pattern of quack doctors

The health care utilization pattern in the Malda district reveals that many people are getting treatment from quack doctors who practice medicine without training, qualification, and registration from the appropriate council or authority (Hammer-schmidt 2005). This type of treatment pattern is risky for patients and sometimes it may be life-threatening due to the wrong treatment (Sharma 2015). During the pandemic of COVID-19, many people have been compelled to visit village quack doctors due to bad financial conditions and avoid social isolation if found covid positive (Hossain et al. 2022). The treatment from quack doctors is an expression of less awareness as well as the backwardness of patients in any place. The quality of health care decreases if quack doctors' practices are prevalent (Hsieh and Tang 2019). The study found a positive relationship between treatment from quack doctors and various age groups and the relation is significant for all age groups in both Englishbazar and Chanchal- II blocks. The regression coefficient (b) and coefficient of determination (r^2) highlight a strong positive relationship for the 14 to 50 age group in the Chanchal- II block.

Good awareness about treatment quality restricts people in Englishbazar block from visiting quack doctors. Another reason for such a utilization pattern in Englishbazar block may be the availability of qualified doctors and government and private health institutions. Meanwhile lack of awareness among people in Chanchal- II block possibly accelerates the utilization of quack doctors. The patients in Chanchal- II block are compelled to get treatment from quack doctors due to insufficient distribution of qualified doctors and government health institutions as per the requirements.

The said treatment pattern is influenced by patients' sex and marital status in both sample blocks. The findings appeared with a significant positive relation between said variables. The regression coefficient and coefficient of determination (r^2) found that said factors were comparatively more effective in Chanchal- II block than in the Englishbazar block. In Chanchal- II block, female patients depend more on quack doctors. Besides less awareness among females, they are often unable to visit government health institutions or qualified doctors for treatment by avoiding domestic responsibilities.

The inverse relation between the level of education and getting treatment from quack doctors is present in both sample blocks and the relation is significant at any level of education. The statistical analysis found that illiterate and less qualified people treated themselves by quack doctors, whereas graduate and highly qualified

patients are not dependable on said doctors, because they are aware of the negative impact as well as risk factors of such type of treatment on health. It has also been found that many qualified patients belonging to economically advanced families can easily get treatment from other sources.

As mentioned before utilization pattern of health care facilities is directly and indirectly influenced by the level of family income. In both sample blocks, utilization of quack doctors is negatively associated with family income which indicates that if family income increases there is a chance of a decrease in utilization of quack doctors, and this relation is found as statistically significant in both sample blocks. The study found many families with better family income consist of numbers of literate family members aware of treatment quality; hence they are not dependable on quack doctors. It is easy to get treatment from qualified doctors or various health institutions for their better income. The domestic environment of said families is also hygienic, that's the reason the occurrence of diseases is also less in number.

Key findings

The study, although comparative; both the blocks consist of the rural population (except Englishbazar municipality among two in the district), which makes many similarities in the utilization pattern. The concentration of health care facilities is relatively better in the Englishbazar block which creates dissimilarities in utilization behavior. The key findings of the study are pointed out below:

- Treatment by themselves at the initial stage of morbidity is more popular among the working male population having little knowledge of medicine in both blocks.
- Most of the hospitals including a district hospital and medical college are situated in the Englishbazar block, which provides more accessibility among people. On the contrary, only one sub-divisional hospital at Chanchal- I block (near Chanchal-II block) provides less accessibility to the neighbour blocks. Although, respondents of both blocks talked about the high population load on government health institutions. People with a better economic background are less likely to utilize government health institutions due to a dirty environment, high doctor-patient ratio, bed crisis, long queues for treatment, and others.
- The high concentration of private chambers and hospitals in the Englishbazar block significantly attracts patients of said block and the whole district. This utilization pattern is less prevalent in the Chanchal-II block due to the less accessibility of the said facilities. Although private chamber of doctors provides treatment facilities to patients, according to many respondents, such private chambers badly influence the quality of treatment in a government health institution because many doctors in government hospitals are involved with the private chambers.
- The existence of quack doctors especially in rural areas is an expression of less awareness among people. This practice is more prevalent in the Chanchal-II block and other rural areas of the district. People with poor socio-economic backgrounds are getting treatment from quack doctors.

Determinants at a glance

Based on the preceding discussion, the role of various determinants is summarized below:

Age

The study found that age is an important factor in the utilization of health care facilities, a similar finding has been confirmed by earlier research (Babitsch et al. 2012; Dou et al. 2015; Gong et al. 2016; Awoke et al. 2017; Yunus et al. 2017). From the discussion, it is safe to say many working people are being self-treated at the initial stage of morbidity with little knowledge of medicines to avoid the long queue at the health institution. Mentionable numbers of patients rely on quack doctors in Chanchal- II block, due to less accessibility to other health facilities. The older patients are more comfortable with private and qualified doctors because of insufficient distribution and less accessibility to government services. Although, the older patients with lower income are dependable on the government health centres if they need hospitalization.

Gender

The result revealed that less utilization of health services among the female population is common in the study area because it is easy for the male population to go a little far distance, maintaining formalities and long queues to get services. Evidently, in Indian society, it is very prominent that due to lower social as well as economic status, females are dependent on male members of their family (Basu and Basu 1991; Velkoff and Adlakha 1998; Sen and Ostlin 2008), even the decision to get services is influenced by males as the head of the family (Shaikh and Hatcher 2005). As per social scientists' opinion, health care utilization variances can be explained by biological differences and their socio-economic status (Rieker and Bird 2005; Morrow 2015). Many studies confirmed that in developing countries women's health is normally neglected (Lane and Meleis 1991; Nandraj et al. 2001).

Marital status

The marital status in the study area appeared as a relatively less influencing determinant of utilization pattern. Married and unmarried people are utilizing different sources of treatment. Despite this, unmarried people get services easily because of their sufficient-free time. Whereas it is not easy to go outside for married females to get services by avoiding family responsibility that is the reason treatment by quack doctors is relatively more observable. It has been said earlier that their decision to get services is influenced by males mostly husbands. There have been few studies

that explained marital status as an important determinant (Verbrugge 1979; Chatterjee et al. 2018).

Education

Education plays a vital role as educated people are more conscious about health that accelerate health care utilization (Yunus et al. 2017; Awoke et al. 2017; Saeed et al. 2016; Paul 2020; Sekoni et al. 2016). Higher educated people get information as they are connected to mass media (Prusty 2015). Notwithstanding, few educated people with little knowledge about medicine rely on self-treatment at the initial stage of morbidity, maximum people with good education get the treatment mostly from qualified doctors, followed by private institutions, and government hospitals. Moreover, underutilization of government hospitals found among many educated people with good income, because of its long queue, insufficient bed, and poor doctor-patient ratio. On the contrary, many illiterates or less educated people are getting treatment from quack doctors.

Income

It is widely accepted that a high level of income has a positive effect on healthcare utilization (Elo 1992; Fosu 1994; Bour 2005); household wealth was positively correlated with healthcare-seeking (Andrews et al. 2020) because it helps to increase an individual's purchasing power (Yunus et al. 2017). In the study area utilization rate is high among economically sound people. Many researchers found income as a crucial determinant of health care utilization (Prusty et al. 2015; Gruber and Kiesel 2010). The study found that most economically sound people are getting treatment from qualified doctors and private institutions, whereas underutilization of government hospitals is present among them. Plentiful respondents with better socio-economic conditions incriminated long queues, time consumption, bed crisis, high doctor-patient ratio, and dirty room condition for their ignorance nature towards government health institutions.

Conclusion

Sustainable development goal (SDG) 3 includes several targets that broadly fall into separate. Most of the targets aim to reduce morbidity and mortality for vulnerable groups such as mothers, new-borns, children, and the elderly; reduce communicable and non-communicable diseases; provide universal health coverage, and strengthen the health sectors. All these targets can be achieved by ensuring the availability of health facilities as per the healthcare needs of the local communities. For that, understanding healthcare-seeking behavior is very much essential. Besides global level or country level study, investigations should be done to understand the utilization behavior in the small-scale areas. That helps

to provide a great opportunity to turn the tide on health problems and to achieve SDG-3, 'ensure healthy lives and promote well-being for all at all ages'.

The study found that the utilization behaviors of local communities are influenced mainly by the level of education and income followed by age, gender, and marital status. Many of the respondents are getting treatment from quack doctors or rely on self-limited knowledge of medicine at the initial stage of morbidity as a result of less awareness among people. The coexistence of public and private health services found in the study area and the utilization of private institutions are mentionable. It can be recommended that the Public–Private Partnerships (PPPs) model may be implemented to make health services more accessible. But importance must be given to the cost of the private health institutions, the utilization of private services can be increased among people by removing price barriers. The study also found that the utilization of private health centres is common among economically sound people. The burdensome factors of underutilization of government health institutions in the study area are long queues, paucity of beds, dirty surroundings, and inadequate distribution. It may be concluded that besides socio-economic factors, the availability of insufficient health care facilities influences the health care utilization behavior in the study area. In this regard, it can be recommended that besides establishing new health care facilities in the needy area; the government should pay attention to strengthening existing health care facilities including manpower to make available the various health services within the health institution premises. Most of the hospitals as well as doctor's chambers are located in a proper town in Englishbazar block, hence it may be suggested that the health care facilities such as Primary Health Care centres (PHCs) and Sub Centres (SCs), Rural Hospitals (RHs), Block Primary Health Centres (BPHCs), Community Health Centres (CHCs) should be more available at the village level. The study also suggests upgrading the sub-divisional hospital to a district hospital which is located in Chanchal- I block (close to Chanchal- II block) may reduce the population load of the district hospital situated in Englishbazar. In the end, it can be said that the awareness camp can change people's perception to accelerate the rate of utilization of different health care facilities and restrict people from visiting quack doctors.

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Author contributions All authors contributed equally to the literature review, data collection, and writing the manuscript.

Data availability Data generated or analyzed from the field survey and a few from secondary sources are included in this article.

Declarations

Conflict of interest The authors declare that they have no conflict of interest to disclose.

Ethical approval The submitted work is original and has not been published before in any journal.

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